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Processing of extreme wind speed and gust data in the Czech Republic, digitizing of old instrumental records, metadata, quality control and archiving by means of CLIDATA database system

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Recent severe windstorm events have reminded us that extreme winds belong among the most dangerous and damaging weather phenomena. For understanding of these events we need to: i) extend knowledge about extreme wind speed, ii) develop and test statistical methods for deriving of extreme wind characteristics from real data. Critical analysis of historical records of wind speed and direction at meteorological stations is required for such task as well as analyzing changes of measurement techniques and influence of neighbouring obstacles.
First step is digitizing historical records from meteorological stations and collecting all available metadata. It means studying not only old historical materials, maps and photos about stations, observers, instruments, conditions on stations during years or their moving but also visiting current stations, recognizing stations surrounding and understanding conditions on stations eventually on places where stations were situated in the past.
CLIDATA database system is developed and used in Czech Hydrometeorological Institute from 1996. This system make possible to process data and proximately also data quality control very easily. Geography part of system contains basic information about staions such as name, begin and end of observation, coordinates or elevation and consists of lists where is possible to define observed elements included name instrument and hight of instrument above station level and also to archive metadata such as photos, maps, picures and other diffuse information about stations. For digitizing old instrumental records are prepared predefined forms which can be soever changed and allow to convert historic units of all elements. Quality control consist in: i) adjusting value limits of all elements which do not allow to store wrong values, ii) definition of quality control formulas that can detect errors or suspicious values, iii) area quality control by means of special extension in GIS environment that can compare digitized data between surrounding stations.

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